REMARKS

As required by 37 C.F.R. § 1.173(c), the status of the claims is as follows:

Claims	1-15	pending original claims
Claims	16-38	canceled new claims
Claim	39	twice amended new claim
Claims	40-43	pending new claims, previously added

Further, support for the addition to claim 39 of the phrase "...whithout heating the substrate" can be found at least at column 6, lines 31-33 and 41-43 of the specification.

Pursuant to the "special" provision of MPEP 708.01 for reissue proceedings, the Applicants request the Examiner take up for action this reissue proceeding in advance of other applications/proceedings, except those involved in litigation, and prepare an office action in order that prompt issuance of a *Notice of Allowability* can be facilitated.

The Office Action of September 21, 2004 has been received and its contents reviewed. Accordingly, the Applicants respectfully request reconsideration of the above-identified application, in view of the above amendment to claim 39 and for the reasons to follow. The Examiner's continued indication that claims 1-15 are allowed is greatly appreciated.

Initially, the Examiner's communication dated August 4, 2004, wherein the Examiner notes that the format of the previous response and consequently the present response is proper as well as Applicants filing of an Application Data Sheet, has also been received and noted.

> Referring now with regard to the Examiner's rejections of:
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> Claims 39-40, under § 103(a), as being obvious in view of the combination of teachings of the Applicants Admitted Prior Art (AAPA) in view of Isamu et al. (JP '679) and Shih et al. (US '320); and
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> Claims 41-43, under § 103(a), as being obvious in view of the combination of teachings of the Applicants Admitted Prior Art (AAPA) in view of Isamu et al. (JP '679), and further in view of Nagao JP ('471);

each of these rejections are traversed for the reasons set forth in Applicants previous response and further in light of the following remarks.

Initially, it is noted that claims 41-43, either directly or indirectly depend on independent claim 39 and include all of the limitations thereof. Consequently it is unclear how claims 41-43 can be rejected based on a combination of references which does not include all those references relied on in rejecting claim 39. Specifically, independent claim 39 has been rejected under § 103(a), as being obvious in view of the combination of teachings of the Applicants Admitted Prior Art (AAPA) in view of Isamu et al. (JP '679) and Shih et al. (US '320), while claims 41-43 have been rejected under § 103(a), as being obvious in view of the combination of teachings of the Applicants Admitted Prior Art (AAPA) in view of Isamu et al. (JP '679), and further in view of Nagao JP ('471). The reference to Shih et al. has been removed from the combination in rejecting claims 41-43, and in doing so clearly fails to render Applicant's claimed invention obvious in that this reference was necessary for the initial rejection of independent claim 39. Accordingly, for at least this reason alone, it is respectfully requested that the rejection of claims 41-43 be withdrawn as failing to render obvious Applicant's claimed invention as set forth in claims 41-43.

With reference now to the rejection set forth in paragraph 2 of the Office Action, as the Examiner can really appreciate, the present invention as recited in independent claim 39 is directed to a method for fabricating a semiconductor device including the steps of forming a semiconductor layer of a Group III nitride containing a dopant over a substrate, forming a p-side electrode out of a metal on the semiconductor layer and after introducing the substrate into a vacuum chamber, charging plasma into the vacuum chamber to form an ambient of plasma while keeping the temperature of the substrate without heating the substrate thereby making the conductivity-type of the semiconductor layer p-type, wherein the ambient of the plasma includes nitrogen plasma. Clearly, the combination proposed by the Examiner neither discloses or remote suggests that which is presently set forth by Applicants' claimed invention.

Particularly, with the present invention and the plasma process set forth therein, the substrate temperature is kept at room temperature. The bond of the Mg-H is cut using electron energy and kinetic energy of plasma so as to eliminate H and activate Mg. The plasma material containing nitrogen is used to prevent release of nitrogen from GaN. Damage caused by plasma irradiation is minimized since such nitrogen plasma is used and there is no need to increase temperatures during the plasma processing as set forth by Applicants' specification and particularly with reference to Fig. 7. Furthermore, no annealing is required and thus, the object of the plasma irradiation is not to increase the temperatures.

To the contrary, in the process set forth in accordance with Applicants' admitted prior art, plasma annealing is carried out at a temperature greater than or equal to 600°C. Therein, the bond of the Mg-H is cut due to high temperatures so as to eliminate H and activate Mg. Due to the high temperatures, GaN is easily

decomposed and nitrogen is readily released and thus the plasma irradiation is needed to prevent nitrogen from being released. In the plasma state, since nitrogen atoms are ionized and radicalized, the release of nitrogen is easily permitted as compared to the normal gaseous state. However, nitrogen can be released during the heating of the substrate. As to the teachings of Isamu et al., this reference relies on electron beam irradiation at a temperature equal to or less than 600°C wherein the bond of Mg-H is cut by energy of accelerated electrons so as to eliminate H and activate Mg. In this regard, due to the ultra high vacuum, no nitrogen pressure is received from the atmosphere, and thus GaN is easily decomposed. However, it is noted that it takes a long time to irradiate the entire wafer since the region to be irradiated by the electron beam is very narrow. Thus, the productivity of such a process is low. As to the teachings of Shih et al., similar to the Applicant's admitted prior art, Shih et al. relies on plasma annealing at a temperature in the range of 700-900°C. Therein, the bond of the Mg-H is cut due to the high temperatures so as to eliminate H and activate Mg. Again, due to the high temperatures, GaN is easily decomposed and nitrogen is readily released. Consequently, the plasma irradiation is needed to prevent nitrogen from being released. In the plasma state, since nitrogen atoms are ionized or radicalized, the release of nitrogen is easily prevented as compared to the normal gaseous state. However, nitrogen can be released during the heating of the substrate.

As the Examiner can readily appreciate from the foregoing, that the present invention resides in cutting the bond of Mg-H using electron energy and kinetic energy of plasma at room temperature so as to eliminate H and activate Mg. In accordance with the present invention, no annealing is needed. Consequently, in accordance with the present invention, the release of nitrogen is unlikely.

On the other hand, Isamu et al. discloses cutting the bond of Mg-H by energy of accelerated electrons at approximately 600°C so as to eliminate H and activate Mg. No annealing is needed, however, Isamu et al.'s technique may be used in combination with annealing. Since GaN is easily decomposed due to the ultra high vacuum, nitrogen is easily released during this process. As to the teachings of Shih et al. and that of the Applicants' admitted prior art, Shih et al discloses cutting the bond of the Mg-H due to high temperature in a temperature range of 700-900°C so as to eliminate H and activate Mg. In this regard, as well as that with the admitted prior art, annealing is essential. Due to the high temperature annealing, GaN is easily decomposed and nitrogen is easily released during the process. Thus, the plasma irradiation is needed to prevent nitrogen from being released. As a result, nitrogen is prevented from being released to a certain extent, however, nitrogen is forced to be released during the heating of the substrate. Consequently, in that the invention disclosed in each of Applicants' admitted prior art, Isamu et al. and Shih et al. require heating of the substrate during the annealing, each necessarily result in nitrogen being released and thus clearly fail to disclose or remotely suggest that which is presently set forth by Applicants' claimed invention wherein after introducing the substrate into the vacuum chamber, a plasma is charged into the vacuum chamber to form an ambient plasma while keeping the temperature of the substrate without heating the substrate. Accordingly, it is respectfully submitted that Applicants' claimed invention as set forth in independent claim 39 as well as dependent claim 40 clearly distinguish over the combination proposed by the Examiner and are in proper condition for allowance.

With reference now to paragraph 3 of the Office Action, claims 41-43 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' admitted prior art in view of Isamu et al. as applied to claims 39 and 40 and further in view of

Japanese Patent Publication 58100471 issued to Nagao. This rejection is respectfully traversed in that the patent to Nagao does nothing to overcome the aforementioned shortcomings associated with the combination proposed by the Examiner.

Again as noted hereinabove, this rejection does not include the reliance on Shih et al as set forth with respect to claim 39. Consequently, it is clear that the combination proposed by the Examiner in rejecting claims 41-43 clearly fails to disclose the features set forth by Applicants' claimed invention.

Moreover, although the patent to Nagao may teach a method of making a light emitting diode in which the p-side electrode is made of aluminum, this reference still fails to overcome the aforementioned shortcomings associated with the previous proposed combination. Particularly, the combination proposed by the Examiner clearly fails to disclose or remotely suggest fabricating a semiconductor device including forming a semiconductor layer of a Group III nitride containing a dopant over a substrate, forming a p-side electrode out of a metal on the semiconductor layer and introducing the substrate into a vacuum chamber, charging plasma into the vacuum chamber to form an ambient of plasma while keeping the temperature of the substrate without heating the substrate, thereby making the conductivity-type of the semiconductor layer p-type. Accordingly, in that claims 41-43 are either directly or indirectly dependent upon independent claim 39 and include limitations thereof, it is respectfully submitted that these claims are likewise believed to be in proper condition for allowance.

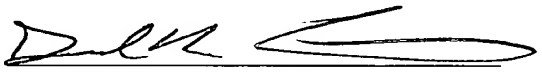
Therefore, in view of the foregoing it is respectfully requested that objections and rejections of record be reconsidered and withdrawn by the Examiner, the claims 1-15 again be indicated as being allowable over the prior art of record and claims 39-

43 likewise being indicated as being allowable over the prior art of record and the application be passed to issued.

Finally, as required by 35 U.S.C. 251, a supplemental declaration form PTO/SB/51 (unexecuted) is submitted herewith, a signed version of this form shall be submitted in due course. Further, upon an indication of allowability of all claims, the original Letter Patent shall be submitted, or a statement provided as to its loss or misplacement filed.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise, which could be eliminated through discussions with Applicants' representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby by expedited.

Respectfully submitted,



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